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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,049	10/23/2003	William J. Brinkley III	7377-P	6094

7590 11/01/2006  
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EXAMINER


RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/691,049	Applicant(s) BRINKLEY, WILLIAM J.	
	Examiner Basia Ridley 	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Invention II, claims 15-20 in the reply filed on 16 October 2006 is acknowledged. Claims 1-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention I, there being no allowable generic or linking claim.

### ***Specification***

2. The disclosure is objected to because of the following informalities:
- P1/L21-21, "(...) and recycled. of the type classified in U.S. Pat. No. Class 423, Subclass 657 and 658." is not clear;
  - P7/L6, "Water can enter tank 1 via valve 10," is not consistent with remainder of specification and drawings. It should be amended to --Liquid comprising water and potassium hydroxide solution can enter tank 1 via line 10--;
  - P8/L4; "inlet 21" should be amended to --outlet 21--;
  - P8/L4-5, "reference numeral 17 broadly designates the level of hydroxide solution" should be amended to --reference numeral 17 broadly designates the hydroxide solution--;
  - P8/L11, "Afterwards ," should be amended to --Afterwards,--.

Appropriate correction is required. Applicant is reminded that no new matter shall be  
Appropriate correction is required.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "40" in Fig. 1 and

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“51” in Fig. 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Sturm et al. (USP 3,574,560) in view of Molter et al. (USP 4,818,637).

Regarding claim 15, Von Sturm et al. discloses a method for generating hydrogen gas comprising the steps of:

- providing a reservoir (1) of hydroxide solution (2);
- providing a gas generating tank (8) in fluid flow communication with said reservoir (1);
- equipping said generating tank with a plurality of tubular, metallic fuel rods (C2/L25-30);
- pressurizing the reservoir (C2/L17-43);

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- transferring hydroxide solution into the gas generating tank from said holding tank in response to pressure to start a gas generating reaction in said generating tank (C2/L17-43);
- selectively pressurizing said generating tank to return hydroxide solution within the gas generating tank back into said reservoir to stop said reaction (C2/L17-43);
- humidifying hydrogen gas from said generating tank;
- delivering hydrogen gas to an application (C1/L15-30).

While Von Sturm et al. discloses that produced hydrogen gas is used in fuel cell (C1/L15-30), the reference does not explicitly disclose humidifying said hydrogen gas from said generating tank before feeding it to said fuel cell.

Molter et al. teaches an improved method for operating a conventional solid polymer electrolyte membrane hydrogen/halogen fuel cell. The improvement comprises humidifying the hydrogen gas prior to it entering the anode chamber thereby providing additional water to be protonically pumped through the membrane to the cathode where it dilutes the acid produced by the cathodic reaction (abstract).

It would have been obvious to one having ordinary skill in the art at the time of the invention to humidify said hydrogen gas from said generating tank of Von Sturm et al. before feeding it to said fuel cell, as taught by Molter et al., for the purpose of improving operation of the fuel cell.

Regarding claim 16, Von Sturm et al. in view of Molter et al. disclose all of the claim limitations as set forth above. Additionally, Von Sturm et al. discloses the method wherein:

- the hydroxide solution providing step uses potassium hydroxide (C2/L17-22).

Regarding claim 17, Von Sturm et al. in view of Molter et al. disclose all of the claims

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limitations as set forth above, but the references do not explicitly disclose specific concentration of potassium hydroxide. The specific concentration of potassium hydroxide is not considered to confer patentability to the claims. As the amount of produced hydrogen and speed and completeness of the chemical reaction are variables that can be modified, among others, by adjusting said concentration of potassium hydroxide, the precise concentration of potassium hydroxide would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed concentration of potassium hydroxide cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the concentration of potassium hydroxide in the method of Von Sturm et al. in view of Molter et al. to obtain the desired amount of produced hydrogen and speed and completeness of the chemical reaction (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

6. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Sturm et al. (USP 3,574,560) in view of Molter et al. (USP 4,818,637), and further in view of Gallagher (USP 3,895,102).

Regarding claims 18-19, Von Sturm et al. in view of Molter et al. disclose all of the claims limitations as set forth above. Additionally, while the references do not explicitly disclose heating of the hydroxide solution within said reservoir to a specific temperature, Von Sturm et al. teaches that an increase in temperature produces a stronger development of gas

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(C2/L46-47). In view of said disclosure, the specific temperature of potassium hydroxide is not considered to confer patentability to the claims. As the speed and completeness of the chemical reaction are variables that can be modified, among others, by adjusting said temperature of potassium hydroxide, the precise temperature of potassium hydroxide would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed temperature of potassium hydroxide cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the temperature of potassium hydroxide in the method of Von Sturm et al. in view of Molter et al. to obtain the desired speed and completeness of the chemical reaction (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223). An ordinary artisan would be further motivated to increase the temperature of the hydroxide solution to approximately 180°F (80-85°C), because said reaction temperature has been shown to work in generation of hydrogen from reaction of aluminum and hydroxide solution by Gallagher (C10/L19-30).

Regarding claim 20, Von Sturm et al. in view of Molter et al. and further in view of Gallagher disclose all of the claim limitations as set forth above. Additionally, Von Sturm et al. discloses the method wherein:

- said fuel rods are aluminum (C2/L17-30).

### ***Conclusion***

7. In view of the foregoing, none of the claims are allowed.

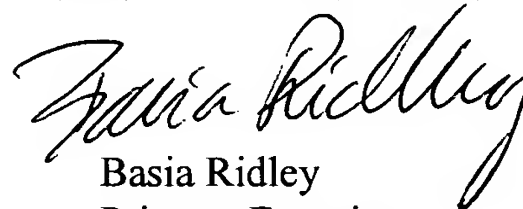
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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Basia Ridley  
Primary Examiner  
Art Unit 1764

BR  
October 30, 2006